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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/057,731	01/24/2002	Jim Janesick	01901071	3160

25700 7590 06/28/2004

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EXAMINER

DICKEY, THOMAS L

ART UNIT PAPER NUMBER

2826

DATE MAILED: 06/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/057,731	JANESICK, JIM	
	Examiner	Art Unit	
	Thomas L Dickey	2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 and 58-71 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-34 and 58-71 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 05/11/2004 has been entered.

Information Disclosure Statement

2. If applicant is aware of any relevant prior art, he/she requested to cite it on form **PTO-1449** in accordance with the guidelines set forth in M.P.E.P. 609.

Election/Restriction

3. In Paper #8 filed on 4/29/03, on page 7, applicant expressly admits that the inventions claimed in claims 1-34 and 58-71 are obvious over each other within the meaning of 35 USC § 103. In light of this admission, the requirement of an election of species has been withdrawn.

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Drawings

4. The drawings remain objected to by the PTO Draftsperson for the reasons noted on the Notice of Draftsperson's Patent Drawing Review, form PTO-948 attached to the paper mailed 07/08/2003. The fact that the application has not been deemed abandoned does not implicitly withdraw the Draftsperson's objections.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

A. Claims 1-11,12-22,23-34,58-69,70, and 71 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Each of claims 1,12,23,58,70, and 71, as amended, recites a combination including "a substrate having a potential," and which requires "the pinned transfer gate being pinned to the potential of the substrate." Applicant thus claims a device having a substrate having a potential, said device being further provided with the means to pin a pinned transfer gate to said potential. Applicant's original application disclosed "The pinned transfer gate is "pinned" because the p++ doped pinned region 219 is tied (or "pinned") to the potential of the

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substrate 202, typically ground or zero volts," Application, page 7, lines 6 and 7, and "The pinned aperture region 304 (like the pinned transfer gate 206) is tied to the substrate 202 potential," Application, page 9, lines 24-25. Thus the application as filed disclosed a substrate which existed at a voltage (typically ground), a pinned transfer gate, and that the pinned transfer gate was tied to the voltage of the substrate. The application as filed did not disclose any means whatsoever to enable a connection between the substrate and the pinned transfer gate where such a connection was able to assure that the substrate and the pinned transfer gate were at the same potential. Applicant's claims will be examined under the assumption that applicant actually merely intended to claim that in the device claimed, the pinned transfer gate was connected (perhaps in a round about fashion by means of the claimed photoreceptor, or the claimed sense node, or by means of the reset transistor, output amplifier, or readout gate claimed in the dependent claims) to the substrate in such a way that the voltage of the pinned transfer gate was related to the voltage of the substrate.

B. Claims 1-34 and 58-71 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. These claims are directed to combinations that include an element referred to as a "Pinned Transfer Gate," that is pinned to the potential of a substrate. It is not known in the art how to make and use a "Pinned Transfer Gate," nor has Applicant sufficiently explained how to do so. In

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particular, Applicant has not shown, nor is it known to the art, how to pin the “Pinned Transfer Gate” to the potential of the substrate.

In the context, not of an imager but rather of a charge transfer device, Hynecek 4,994,875 discloses a “virtual transfer gate” wherein a “virtual electrode” prevents electrons from transferring until the voltage on an insulated “conductive electrode” reaches a critical negative voltage. Hynecek’s “virtual electrode” is a P type region which is connected to the voltage of a substrate by virtue of being in electrical contact with P+ type channel stops which are in turn in electrical contact with the substrate.

Also in the charge transfer device art is the teaching of Janesick 5,077,592, which discloses an “open pinned-phase region” comprising a concentrated but very shallow implant of P-type dopant (B) in an n-channel 10, which connects the surface potential to the voltage of a substrate and acts as a virtual gate.

Would it be possible for one to make the element Applicant identifies as a “Pinned Transfer Gate” by following the teachings of Hynecek 4,994,875 or Janesick 5,077,592? In either of these two cases, Applicant should say so. If one skilled in the art could make the “Pinned Transfer Gate” and connect it to the voltage of a substrate by following some other teaching, Applicant should identify that teaching.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1 and 5-8 are rejected under 35 U.S.C. 102(e) as being anticipated by TSU-NAI (6,603,144).

Tsunai discloses an imager cell including a substrate 12 having a potential, the imager cell comprising a photoreceptor comprising a photodiode 7-16, a sense node 5, and a pinned transfer gate 17-15 comprising a p-doped pinned region 17 in an n-doped transfer region 15 disposed between the photoreceptor 7-16 and the sense node 5, the pinned transfer gate 17-15 being pinned to the potential of the substrate 12 (by virtue of p-type photodiode channel stopper 6, note figure 1, forming an ohmic connection between p-doped pinned region 17 and substrate 12) and further being configured to transfer charge (through n-doped transfer region 15) between the photoreceptor 7-16 and the sense node 5. Note figures 1, 2a, 2b, 4, 5a, and 5b, and column 4 lines 39-51 of Tsunai. Note the contrast between the pinned transfer gate 15-17 in figure 2a and the ordinary gated transfer gate equipped with "shutter gate" 34, shown in Tsunai's prior art at figure 9a.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-34 and 58-71 are rejected under 35 U.S.C. 103(a) as being unpatentable over TSUNAI (6,603,144).

Tsunai discloses an imager cell including a substrate 12 having a potential, the imager cell comprising a photoreceptor comprising a photodiode 7-16, a sense node 5, and a pinned transfer gate 17-15 comprising a p-doped pinned region 17 in an n-doped transfer region 15 disposed between the photoreceptor 7-16 and the sense node 5, the pinned transfer gate 17-15 being pinned to the potential of the substrate 12 (by virtue of p-type photodiode channel stopper 6, note figure 1, forming a ohmic connection between p-doped pinned region 17 and substrate 12) and further being configured to transfer charge (through n-doped transfer region 15) between the photoreceptor 7-16 and the sense node 5. Note figures 1, 2a, 2b, 4, 5a, and 5b, and column 4 lines 39-51 of Tsunai. Thus Tsunai discloses an imager cell having all the elements of claim 1. By Applicant's express admission, claims 2-34 and 58-71 are obvious over the combination of these elements. See Applicant's Paper #8 filed on 4/29/03, page 7.

Response to Arguments

8. Applicant's arguments with respect to claims 1-34 and 58-71 have been considered but are moot in view of the new ground(s) of rejection.

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Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas L Dickey whose telephone number is 571-272-1913. The examiner can normally be reached on Monday-Thursday 8-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J Flynn can be reached on 571-272-1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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